Figure 1: Stress-strain hysteresis curve diagram

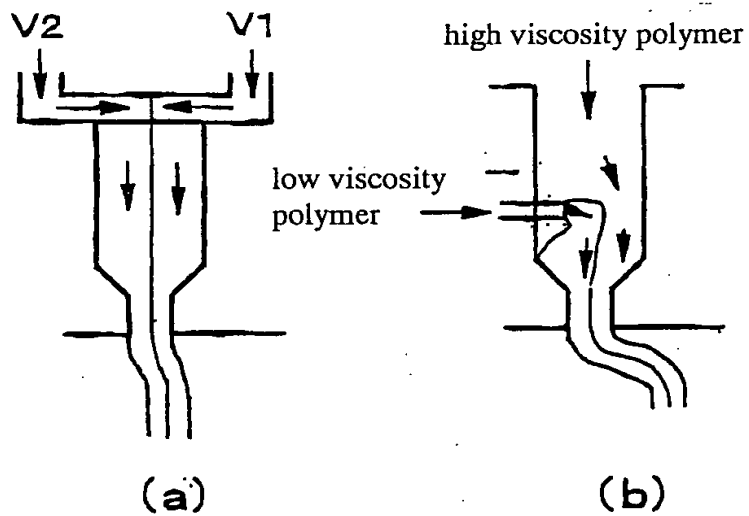V2   V1

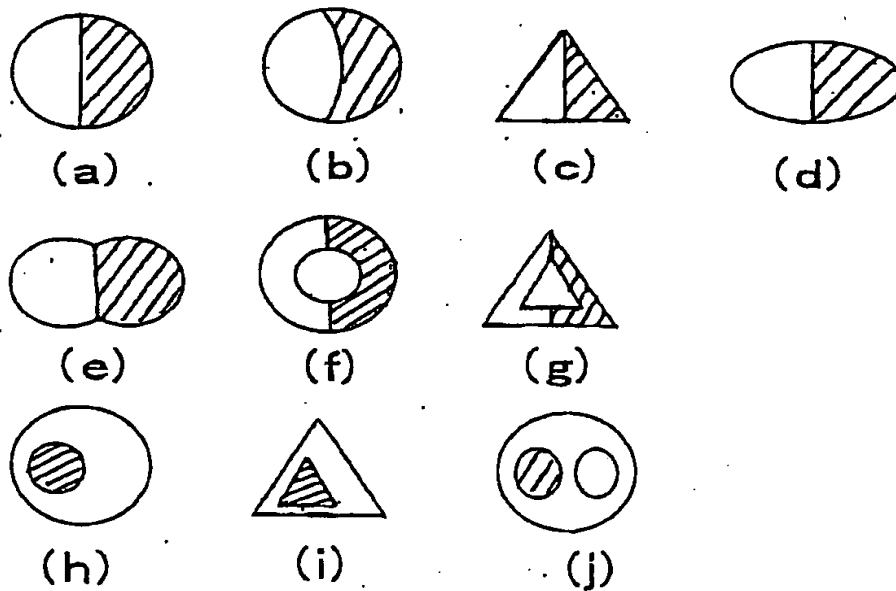high viscosity polymer

low viscosity polymer

(a)   (b)

Figure 2

(a)   (b)   (c)   (d)

(e)   (f)   (g)

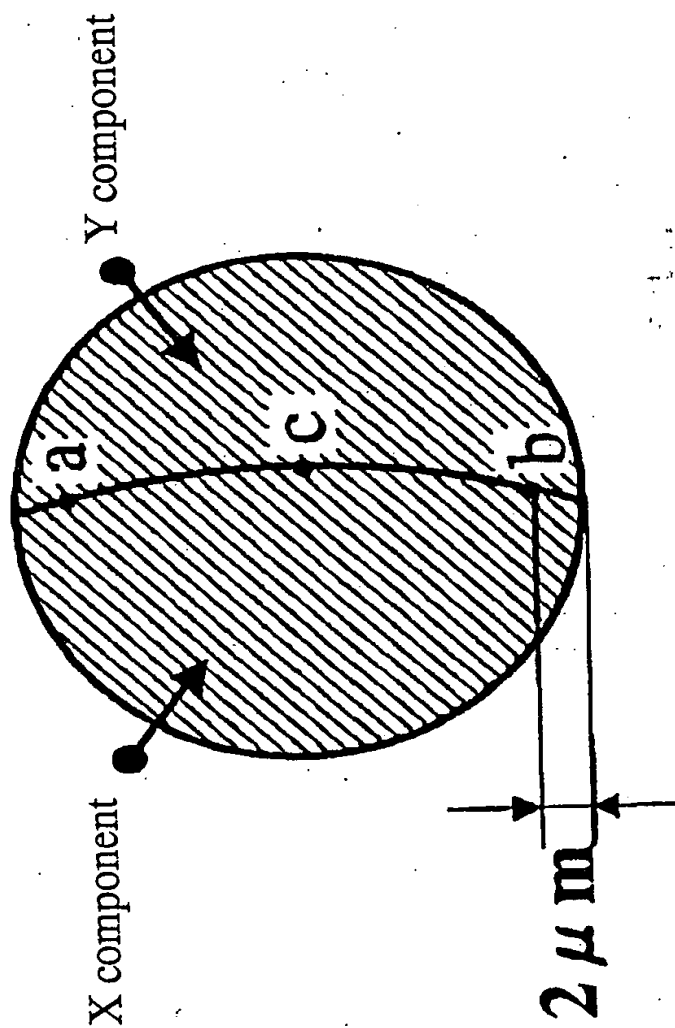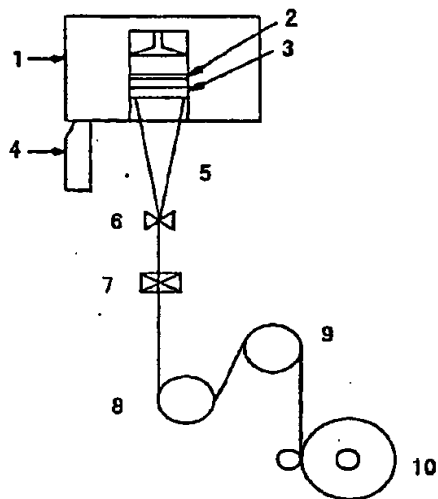(h)   (i)   (j)

Figure 3

5

10

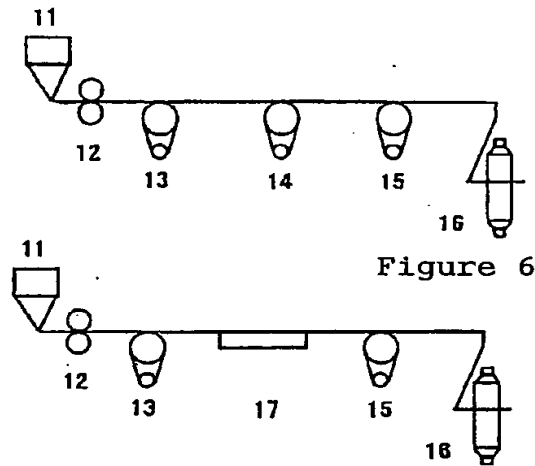Y component

X component

a
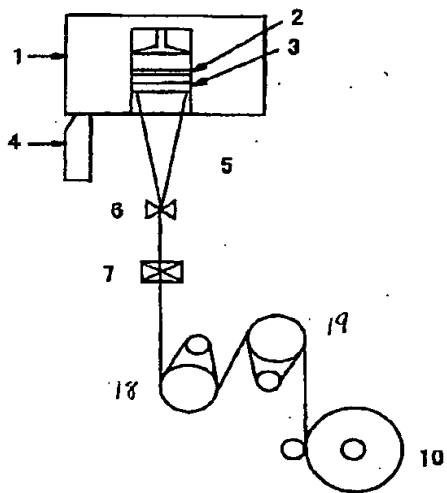
c

b

2 μ m

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8
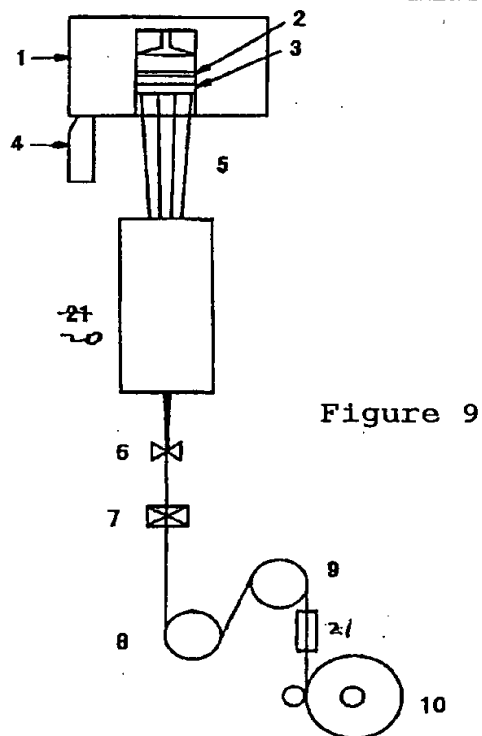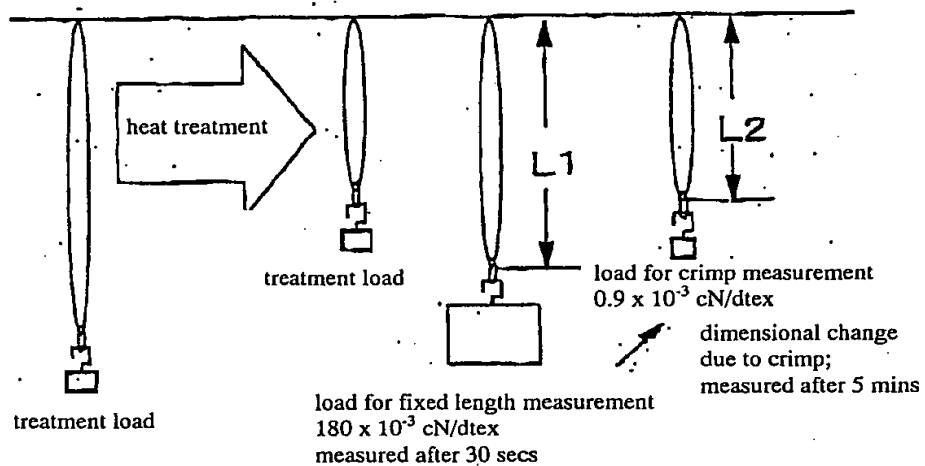
Figure 9

crimp stretch factor (%) = $(L_1 - L_2)/L_1 \times 100$ (%)

heat treatment: 15 mins in boiling water +
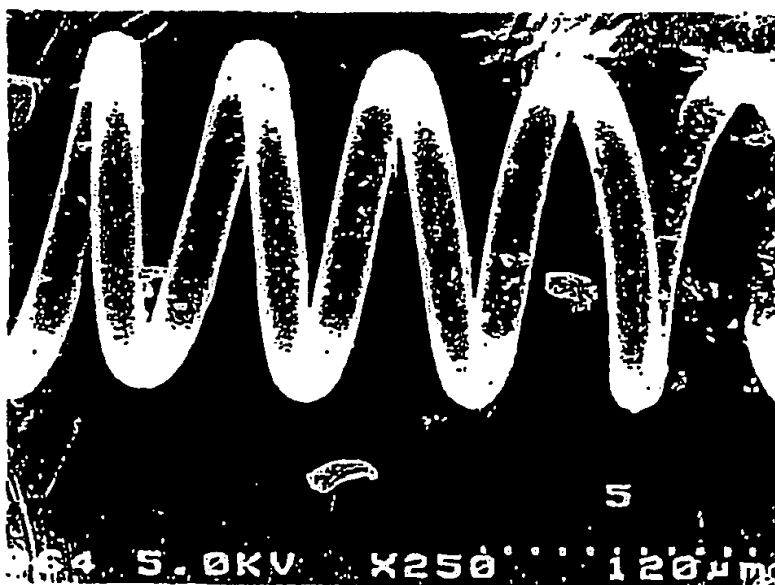   15 mins dry heat at 180°C

Figure 10

Figure 11